CLAIMS

1. Method for producing an integrated monolithic aluminum structure, comprising the steps of:

a.) providing an aluminum alloy plate from an aluminum alloy with a predetermined thickness,

b.) shaping or forming said alloy plate to obtain a predetermined shaped structure,

c.) heat-treating said shaped structure,

d.) optionally machining said shaped structure to obtain an integrated monolithic aluminum structure.

2. Method according to claim 1, wherein said heat treatment under step c) comprises natural ageing, artificial ageing or an annealing treatment.

3. Method according to claim 1, wherein said shaped structure is being artificially aged to a T6, T79, T78, T77, T76, T74, T73 or T8 temper condition.

4. Method according to claim 1, wherein the shaping or forming process during step b) comprises cold forming.

5. Method according to claim 1, wherein said aluminum alloy plate has been stretched after quenching prior to the shaping or forming step.

6. Method according to claim 1, wherein said aluminum alloy plate has been stretched in a range of up to 8% after quenching prior to the shaping or forming step.

7. Method according to claim 1, wherein said aluminum alloy plate has been stretched in a range of 1 to 5% after quenching prior to the shaping or forming step.

8. Method according to claim 1, wherein said aluminum alloy plate has been brought to a temper selected from the group of comprising T4, T73, T74 and T76, prior to the shaping or forming step.

9. Method according to claim 1, wherein said aluminum alloy plate is produced from an aluminum alloy which is selected from the group of AA2xxx, AA5xxx, AA6xxx or AA7xxx-series.

10. Method according to claim 1, wherein said aluminum alloy plate is produced from an aluminum alloy selected from the group of AA7x50, AA7x55, AA7x75 and AA6x13 series alloys.

11. Method according to claim 1, wherein said aluminum alloy plate is produced from an aluminum alloy having a composition consisting of, in weight percent:

Zn	5.0 - 8.5
Cu	1.0 - 2.6
Mg	1.0 - 2.9
Fe	< 0.3,
Si	< 0.3,

optionally one or more elements selected from:

Cr	0.03 – 0.25
Zr	0.03 - 0.25
Mn	0.03 - 0.4
V	0.03 - 0.2
Hf:	0.03 - 0.5
Ti	0.01 – 0.15,

the total of said optional elements not exceeding 0.6,

incidental impurities each <0.05, total <0.20

the balance aluminum.

12. Method according to claim 1, wherein said shaped structure has a pre-machining thickness in the range of 10 to 220 mm.

13. Method according to claim 1, wherein said shaped structure has a pre-machining thickness in the range of 15 to 150 mm.

14. Method according to claim 1, wherein said shaped structure has a pre-machining thickness in the range of 30 to 60 mm.

15. Method according to claim 1, wherein the integrated monolithic aluminum structure has a distortion in its longitudinal direction of less than 0.13 mm when measured according to BMS 7-323D, section 8.7.

16. Method according to claim 1, wherein the integrated monolithic aluminum structure has a distortion in its longitudinal direction of less than 0.10 mm when measured according to BMS 7-323D, section 8.7.

17. Method according to claim 1, wherein the integrated monolithic aluminum structure is part of a wing skin or a frame portion for an aircraft.

18. Method according to claim 1, wherein said aluminum alloy plate is produced from an aluminum alloy having a composition consisting of, in weight percent:

Zn	5.0 - 8.5
Cu	1.0 - 2.6
Mg	1.0 - 2.9
Fe	< 0.15
Si	< 0.15,

optionally one or more elements selected from:

Cr	0.03 – 0.25
Zr	0.03 - 0.25
Mn	0.03 - 0.4
V	0.03 - 0.2
Hf:	0.03 - 0.5
Ti	0.01 – 0.15,

the total of said optional elements not exceeding 0.6,

incidental impurities	each <0.05, total <0.20
the balance aluminum.	

19. Aluminum product produced from an integrated monolithic aluminum structure produced in accordance with the method according to claim 1, wherein said shaped structure is machined to obtain an integrated aluminum structure with a base sheet and integral components.

20. Aluminum product according to claim 19, wherein said base sheet is a fuselage skin of an aircraft and said integral components are at least parts of stringers or other integral reinforcements of the fuselage of an aircraft, and having a built-in radius.

21. Aluminum product according to claim 19, wherein said base sheet is the base skin of an integrated structure like an integrated door and said integral components are at least parts of the integral reinforcements of the integrated structure of an aircraft.

22. Aluminum product as claimed in claim 19, wherein said base sheet is a wing skin of an aircraft, said components are at least parts of integral ribs or other integral reinforcements of a wing of an aircraft.